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Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): **Andrew Edward Ryan**

DISTRIBUTED CLIENT/SERVER COMPUTER NETWORK

Enclosed are:

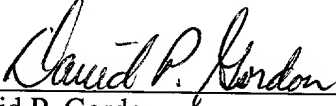
- ☐ 2 Sheets of drawings
- ☒ Assignment Recordation Sheet
- ☒ Assignment of Invention to: **Visage Developments Limited**
- ☐ 2 Statements to establish small entity status under 37 C.F.R. 1.9 and 1.27
- ☒ Declaration and Power of Attorney documents
- ☐ Preliminary Amendment and Remarks
- ☐ Other:

The filing fee has been calculated as shown below:

			SMALL ENTITY		OR	LARGE ENTITY	
FOR	NO. FILED	NO. EXTRA	RATE	FEE		RATE	FEE
BASIC FEE				\$ 380			\$ 760
TOTAL CLAIMS	15 -20	0	X 9			X 18	
INDEP CLAIMS	2- 3	0	X 39			X 78	
MULT. DEPENDENT CLAIMS PRESENTED			+130			+260	
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- ☒ A check in the amount of \$ 420.00 to cover the filing/assignment recordation fee is enclosed.
- ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____.
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- ☐ Other:

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Reg. No. 29,996

JC649 U.S. PTO
09/330975
06/11/99

Applicant or Patentee: _____ Attorney's
Serial or Patent No.: _____ Docket No.: _____
Filed or Issued: _____
For: _____

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(c)) - SMALL BUSINESS CONCERN

I hereby declare that I am

- ☐ the owner of the small business concern identified below:
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN Visage Developments Limited
ADDRESS OF CONCERN Worcester Park, Surrey, KT4 7PU, United Kingdom

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled Distributed Client/Server Computer Network by inventor(s) Andrew Edward RYAN described in

- ☒ the specification filed herewith
☐ application serial no. _____, filed _____
☐ patent no. _____, issued _____

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e). *NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME _____
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

NAME _____
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING John Hugh Evans Davies
TITLE OF PERSON OTHER THAN OWNER Director
ADDRESS OF PERSON SIGNING 4a Cowper Road, Berkhamstead,
Hertfordshire, HP4 3DA, England.

SIGNATURE [Signature] DATE 8th June 1999

Applicant or Patentee: _____ Attorney's
Serial or Patent No.: _____ Docket No.: _____
Filed or Issued: _____
For: _____

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled _____ described in

- ☒ the specification filed herewith
☐ application serial no. _____, filed _____
☐ patent no. _____, issued _____

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☐ no such person, concern, or organization
☒ persons, concerns or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)


FULL NAME Visage Developments Limited
ADDRESS Worcester Park, Surrey, KT4 7PU, United Kingdom
☐ INDIVIDUAL ☒ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME _____
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF INVENTOR	NAME OF INVENTOR	NAME OF INVENTOR
Andrew Edward RYAN		
Signature of Inventor	Signature of Inventor	Signature of Inventor
		
Date	Date	Date
8 JUNE 1999		

Distributed Client/Server Computer Network

FIELD OF THE INVENTION

The present invention relates to a distributed client/server computer network, and more particularly to a distributed client/server computer network which provides a client with controlled access, via a remote server, to a particular network resource such as an Internet web-site or service.

BACKGROUND OF THE INVENTION

A large number of distributed client/server computer networks are known wherein an appropriate authorisation code must be transmitted from a client to a remote server for the client to gain access, via the server, to a particular network resource.

The vast majority of authorisation codes comprise a series of alphanumeric characters, a "password", which is entered by a user via a keyboard interface.

However, a password is inherently difficult to remember, particularly if it used seldomly over a prolonged period of time, and is easily conveyed either verbally or visually to an unscrupulous third party who might use the password to gain unauthorised access to a network resource.

Our European patent No. 0614559 discloses a personal identification device for providing controlled access to a computer system. The device comprises a store of identification codes and associated authorisation codes, access to the computer system being provided where an identification code/authorisation code combination, submitted by a user, matches a combination stored previously in a memory of the device.

The device of European patent No. 0614559 overcomes the problems associated with the use of alphanumeric passwords by using, for each authorisation code, a respective series of complex images selected from a plurality of similar complex images. Such complex images may take a number of different forms, e.g. visual images, auditory images, etc., however digitised images of human faces have been found to be particularly suitable due to the innate ability of humans to

readily distinguish between faces which differ in appearance from one another in very subtle respects, but also due to the fact that such subtle differences in appearance are very difficult to convey verbally or otherwise from person to person.

An object of the present invention is therefore to incorporate, in a particularly efficient and secure manner, a personal identification system of the type disclosed in European patent No. 0614559 into a distributed client/server computer network, to thereby provide a client with controlled access, via a remote server, to a particular network resource.

SUMMARY OF THE INVENTION

In accordance with the present invention, there is provided a distributed client/server computer network wherein the identity of at least one complex image, selected from a plurality of complex images stored by a client, is transmitted to a remote server which determines, from the identity of the or each image selected, whether the client is authorised to gain access, via the server, to a particular network resource.

The authorisation procedure provided by such a network is clearly very efficient in that once the client has been provided with a store of complex images, subsequent access to the network resource requires only the identity of the or each selected image, rather than the image itself, to be communicated between the client and the server. Thus, the significant time delays associated with the transmission of complex images are avoided.

Furthermore, the network is highly secure as no information is stored by the client which might be used to determine the image or images which must be selected to provide the client with access to the network resource.

Preferably the plurality of images comprises at least one key image and at least one dummy image, access to the network resource being gained by the client by selecting the or each key image in preference to the or each dummy image. However, the order in which two or more images are selected may also or otherwise be used to determine whether the client is authorised to gain access to the network resource.

Most preferably, the plurality of images are presented

in successive, mutually-exclusive subsets, each subset containing a plurality of dummy images and a key image which must be selected in preference to the dummy images in its respective subset.

5 Preferably the plurality of images are down-loaded from the server to the client.

The image or images which must be selected may be chosen from a plurality of images stored by the server or may be chosen from the plurality of images stored by the client.

10 In the former case, the or each chosen image is preferably a key image which is down-loaded from the server to the client together with a plurality of dummy images. The dummy images may comprise the remainder of the plurality of images from which the or each key image is chosen, a subset thereof
15 or an alternative set of images to those from which the key image or images are chosen, but which images bear a resemblance to the key image or images.

In the latter case, it will be appreciated that the identity of the or each chosen image must be transmitted from
20 the client to the server.

In either case, where two or more images are chosen, the order in which those images are chosen may determine the order in which the images must subsequently be selected.

Also in accordance with the present invention, there is
25 provided a method for providing a client of a distributed client/server computer network with controlled access, via a remote server, to a particular network resource, said method comprising the steps of providing the client with a store of complex images, selecting at least one image from the stored
30 images and transmitting the identity of the or each selected image to the server which determines, from the identity of the or each image selected, whether the client is authorised to gain access, via the server, to the network resource.

Preferably the step of providing the client with a
35 store of complex images comprises down-loading the images from the server to the client.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the present invention will now be described by way of an example only and with reference to the

accompanying drawings, in which:

Figure 1 is a schematic view of a distributed client/server computer network in accordance with the present invention; and

5 Figure 2 is drawing of a computer having a screen display from which complex images may be selected.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figure 1 of the drawings, a distributed client/server computer network is shown comprising a plurality
10 of local computer systems 2, each of which communicates over a respective telephone line or other telecommunications link with a remote computer system 4, hereinafter referred to as a server, which is arranged to provide each of the local computer systems 2 with controlled access to one or more network
15 resources 6, such as Internet sites and services.

In the present context, any of the local computers 2, when in communication with the server, is termed a client.

Also, whilst a network is shown comprising a plurality of independent local computer systems 2, a single server 4 and
20 a plurality of resources 6 which are remote from the server 4, the local computer systems may instead be integrated into a local area network, the server may be that of an Internet access provider, itself in communication with a plurality of other servers, or a server with which that of the Internet
25 access provider communicates, and one or more of the resources may be provided locally by the server.

In the embodiment illustrated, where a client 2 is to be provided with controlled access to a particular network resource 6, the client 2 must first transmit to the server 4
30 a chosen alphanumeric identification code and corresponding authorisation code, a record of the two codes being stored by the server 4 for subsequent verification of the client 2.

The authorisation code comprises a coded reference to a sequence of four key images chosen from a display of thirty
35 six complex images down-loaded to the client 2 from the server 4.

Once an identification code and a corresponding authorisation code have been chosen, the client 2 may subsequently gain access to ("logon" to) the network resource

6 by re-transmitting the same combination of codes to the server 4.

Figure 2 shows one of a sequence of four displays in which a respective one of the four key images is displayed together with eight dummy images arranged in a 3x3 matrix 8. Each key image must be selected over the dummy images in its respective display for the client to be provided with access to the resource.

The network thus described is clearly very efficient in that, once the client 2 has been provided with a store of complex images, subsequent access to a network resource 6 requires only the identity of a selected image, rather than the image itself, to be communicated between the client 2 and the server 4. Thus, the significant time delays associated with the transmission of complex images are avoided.

Furthermore, the network is highly secure as no information is stored by the client 2 which might be used to determine the image or images which must be selected to provide the client 2 with access to the network resource 6.

CLAIMS

- 1) A distributed client/server computer network wherein the identity of at least one complex image, selected from a plurality of complex images stored by a client, is transmitted to a remote server which determines, from the identity of the or each image selected, whether the client is authorised to gain access, via the server, to a particular network resource.
- 2) A distributed client/server computer network as claimed in Claim 1, wherein the plurality of images comprises at least one key image and at least one dummy image, access to the network resource being gained by the client by selecting the or each key image in preference to the or each dummy image.
- 3) A distributed client/server computer network as claimed in Claim 1, wherein the order in which two or more images are selected is used to determine whether the client is authorised to gain access to the network resource.
- 4) A distributed client server computer network as claimed in Claim 1, wherein the plurality of images are presented in successive, mutually-exclusive subsets, each subset containing a plurality of dummy images and a key image which must be selected in preference to the dummy images in its respective subset.
- 5) A distributed client/server computer network as claimed in Claim 1, wherein the plurality of images are down-loaded from the server to the client.
- 6) A distributed client/server computer network as claimed in Claim 1, wherein the image or images which must be selected are chosen from the plurality of images stored by the client.
- 7) A distributed client/server computer network as claimed in Claim 5, wherein the image or images which must be selected are chosen from a plurality of images stored by the server.

- 8) A distributed client/server computer system as claimed in Claim 7, wherein the or each chosen image is a key image which is down-loaded from the server to the client together with a plurality of dummy images.
- 5 9) A distributed client/server computer system as claimed in Claim 8, wherein the dummy images comprise the remainder of the plurality of images from which the or each key image is chosen.
- 10 10) A distributed client/server computer system as claimed in Claim 8, wherein the dummy images comprise a subset of the remainder of the plurality of images from which the or each key image is chosen.
- 15 11) A distributed client/server computer system as claimed in Claim 8, wherein the dummy images comprise an alternative set of images to those from which the key image or images are chosen, but which images bear a resemblance to the key image or images.
- 20 12) A distributed client server computer system as claimed in Claim 6, wherein the order in which two or more images are chosen determines the order in which the images must subsequently be selected.
- 25 13) A distributed client server computer system as claimed in Claim 7, wherein the order in which two or more images are chosen determines the order in which the images must subsequently be selected.
- 30 14) A method for providing a client of a distributed client/server computer network with controlled access, via a remote server, to a particular network resource, said method comprising the steps of providing the client with a store of complex images, selecting at least one image from the stored images and transmitting the identity of the or each selected image to the server which determines, from the identity of the or each image selected, whether the client is authorised to

15) A method as claimed in Claim 14, wherein the step of providing the client with a store of complex images comprises down-loading the images from the server to the client.

ABSTRACT

A distributed client/server computer network wherein the identity of at least one complex image, selected from a plurality of complex images stored by a client, is transmitted
5 to a remote server. The remote server then determines, from the identity of the or each image selected, whether the client is authorised to gain access, via the server, to a particular network resource. The network is thus efficient, as the complex images themselves do not need to be transmitted from the client
10 to the server, and secure, as no authorisation information is stored by the client.

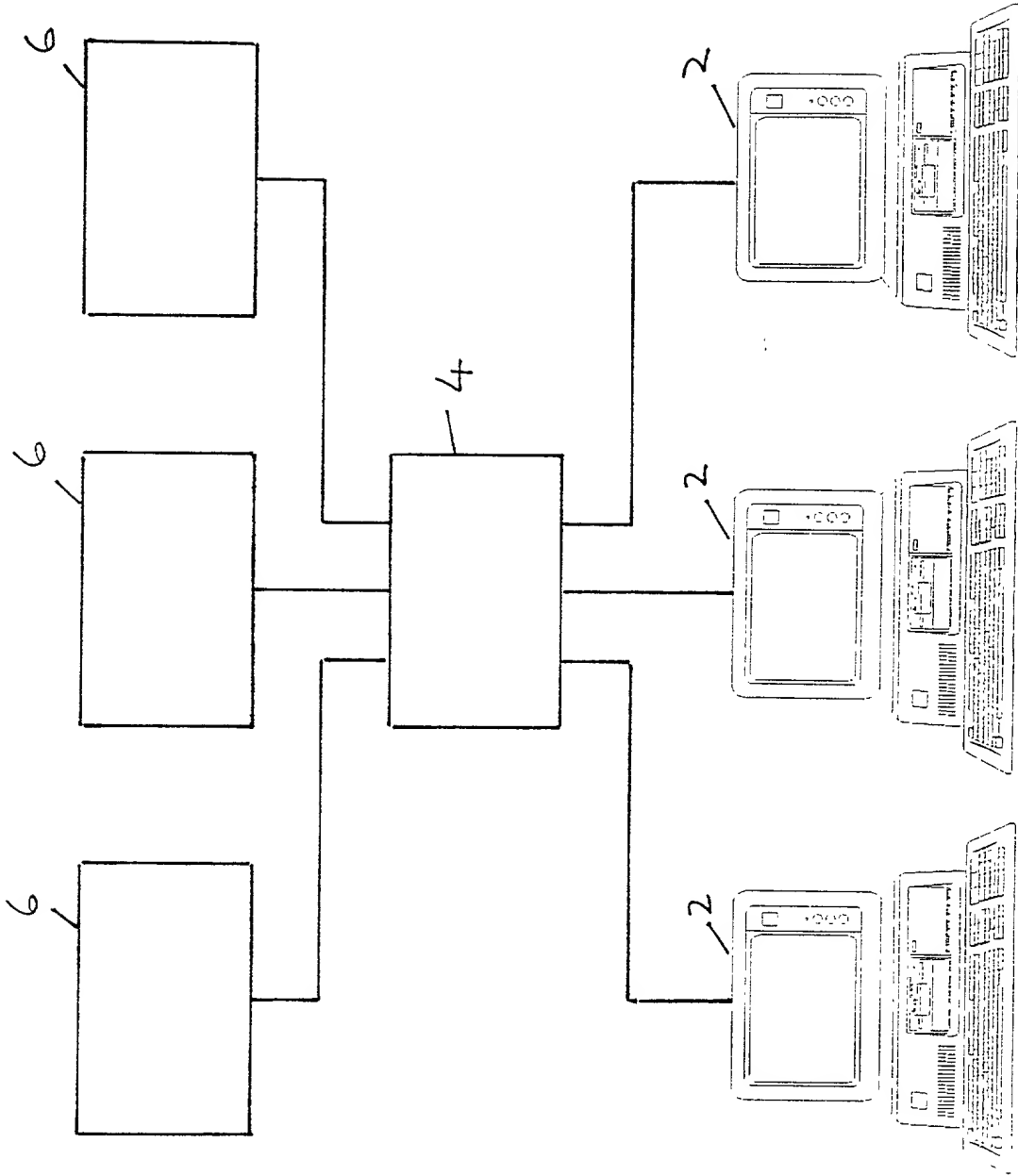


Figure 1

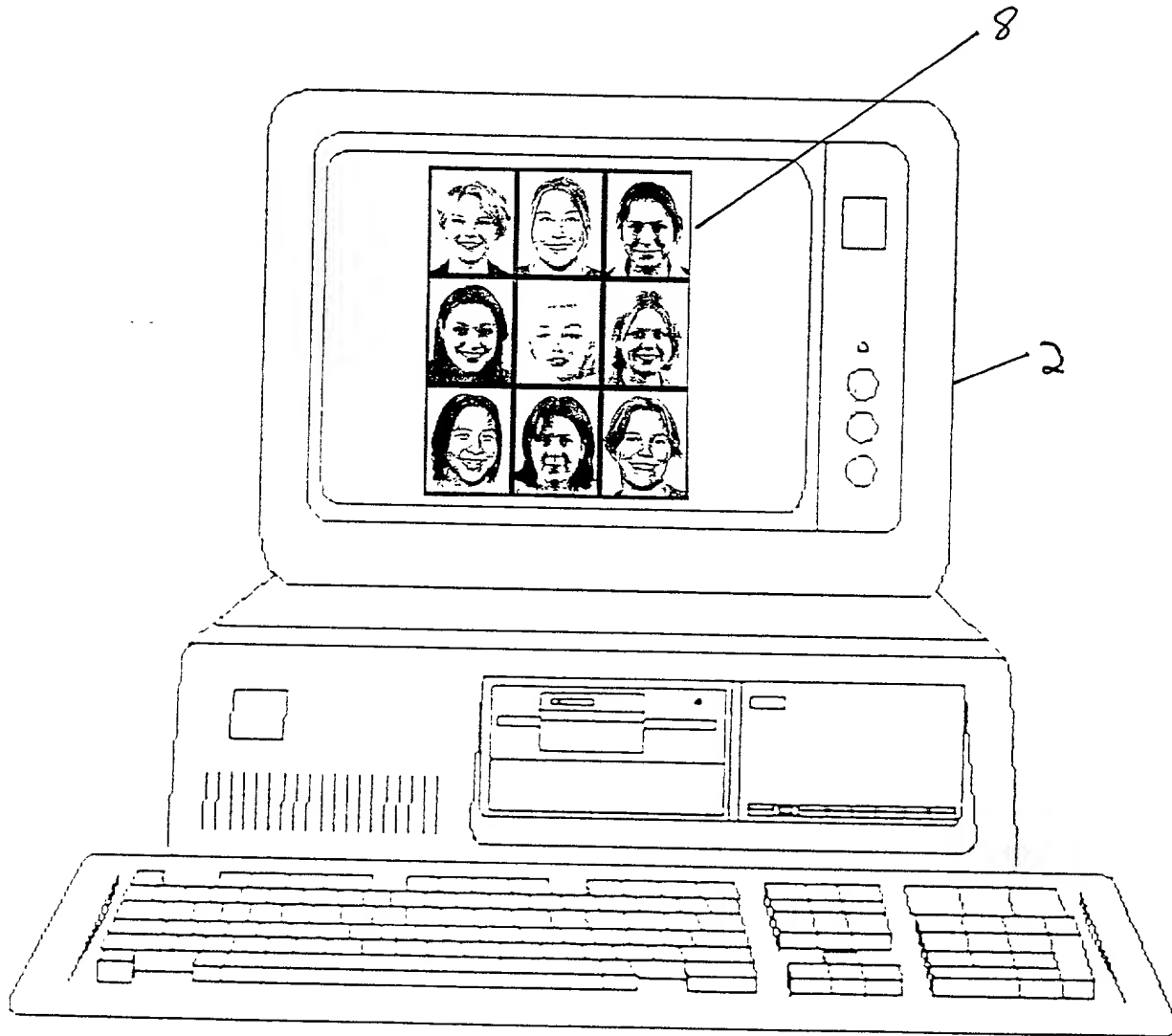


Figure 2

DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

As below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, and

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed for and for which a patent is sought on the invention entitled

Distributed Client/Server Computer Network

_____, the specification of which

☒ [X] is attached hereto.

☐ [] was filed on _____

as application Serial Number _____

and was amended on (if applicable) _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I verify that I am qualified as an independent inventor under Title 37, Code of Federal Regulations, Section 1.9(c), and my obligation to assign rights to this invention, if any, is to a qualified small business concern under Title 37, Code of Federal Regulations, Section 1.9(d).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

_____ (Number)	_____ (Country)	____/____/____ [] YES [] NO D/M/YR FILED
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_____ (Number)	_____ (Country)	____/____/____ [] YES [] NO D/M/YR FILED
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I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose

material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Ser. No) (Filing Date) (Status-Patented, pending, abandoned)

(Application Ser. No) (Filing Date) (Status-Patented, pending, abandoned)


As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

David P. Gordon (29,996)

Address all telephone calls to David P. Gordon at (203) 329-1160
Address all correspondence to David P. Gordon, Esq.
65 Woods End Road
Stamford, Connecticut 06905
U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SOLE OR FIRST INVENTOR

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Citizenship British
P.O. Address 1 Grantham Road, Brighton, BN1 6EE, United Kingdom.

SECOND JOINT INVENTOR (IF ANY)

Signature _____ Date _____
Full Name _____
Residence _____
Citizenship _____
P.O. Address _____